

Consultation Response Form SCENIHR preliminary report on  
**“The safety of dental amalgam and alternative dental restoration materials for patients and users”**

**Case number:**  
**517159724081705308**

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**General observations: The scientific and clinical evidence.**

*Disagree*

Members of the board of SCENIHR presented their opinion and not an independent expertise. Many of them are dentist only and therefore overweigh the practical advantages of the use of dental amalgam. The amount of critical literature and long time experience in environmental medical offices concerning the use of mercury containing amalgam for restoration is not realised (8,81).

The mechanical performance of dental amalgam is insufficiently demonstrated. Basically mercury vapours from dental amalgam continuously (77). Heavy metals from amalgam fillings are permanently burdening the body. Basically processing state of the surface does not change anything. Even high graduated polishing will stand only for a short time to get porous more and more in the following process. It is insufficient regarding the primarily costs of dental treatment itself only. Ecologically Looking for the balance sheets by effects to human health and environment one has to follow up the costs all over occurring due to the use of dental amalgam. The arguments that the use of dental amalgam is declining because of colouration of the surface is not really supported by science. Actually there is a broad rejection by the population regarding the risks. So in between people usually oppose the supply by dental amalgam and ask for more suitable materials. In some European countries disapproval of payment for dental amalgam restoration by health insurance companies was followed by averting of patients from asking those heavy metal mixtures.

There is a general critical toxicological risk assessment to mercury independent to the individual position to dental amalgam (39). As the main source of mercury burden for the population is dental amalgam (8,52, 81) the ban mercury in eco systems will only succeed if the use of dental amalgam is forbidden as well.

There is plenty of scientific evidence for toxic, immunotoxic, teratogene, fetotoxic and metabolic health damages due to chronic intake of mercury from dental amalgam (3, 5, 9,10, 12, 18-20,22,24,27,28, 31-34, 36,38, 41, 45, 47, 48, 54, 56-62, 68-72, 75, 76, 82, 84-86) In spite of contradiction to these proven references they had not been disproved scientifically yet. Contradiction to these proven references is only the opinion of SCENIHR board and not scientifically proven fact.

While allergic reactions are regarded as lower health risk systemic effects on dental amalgam play the decisive role. Diseases like Alzheimer's, Parkinson's and Multiple Sclerosis are usually not triggered by only a single factor. Mercury from dental amalgam principally can induce these diseases. Therefore amalgam will often be the cause. Newest scientific investigations concerning the use of dental amalgam demonstrate the fetotoxicity and risk for the

neuropsychological development of children. Until today this literature is not contradicted (1,2,3,11,13,14,16,17,23,25, 26).

Mercury and his compounds are metabolized in the body. Elementary mercury (Hg 0) is oxidised to Hg<sup>2+</sup>. In Erythrocytes of the liver and in the brain oxidation only happens by Catalase which after inhalation of vaporized mercury leads to accumulation in the brain. Only a small amount of Hg<sup>2+</sup> is able to diffuse back through the blood brain barrier (39). By exposition over many years causes health risk even by low concentration of vaporized mercury. Some scientific investigations prove that there is a forty folds toxicity of Hg 0 over metallic mercury, similar to methyl mercury (52).

Chronic burden from mercury is not to be demonstrated by investigation of blood samples because mercury there has a half life of 3 days only. Chronic low level supply of heavy metal will not accumulate in the blood but in end organs (29,31,32, 37, 38). More exact data were found by analysing organs of dead people. The amount of mercury in organs especially in the nervous system was found multiple folds higher in people with dental amalgam than without regarding equally nutrition (18).

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### **Question 1:**

**Is there scientific evidence that supports a link between amalgam and allergic reactions, neurological disorders or other health disorders?**

*Disagree*

**1. Unsatisfactory conclusion from the scientific point of view**

**2. Relevant information missing from the analysis of the situation**

Concerning allergic reaction by dental amalgam assessment is wrong. Only those reactions are discussed and tested by epidermal test settings which might occur by direct epidermal or mucosal contact. But the immunological reaction following the transport and deposition of heavy metals in organs is not investigated sufficiently by epicutaneous tests. This method only is valid to prove reaction after epidermal antigen contact (42,53,56). This does not happen with mercury vapour resumption from dental amalgam. Testing of drug allergy shows as well that allergies caused by systemically presented antigens cannot be investigated by this method (7,56) Reproducibility of epicutaneous testing is bad (7) The results of several scientific groups concerning sensitization of lymphocytes against heavy metals especially mercury and the clinic correlation demonstrated corresponding results (69,70,74,75) A woman developed Guillain-Barré Syndrome twice within two years. First time caused by intake of Roxitromycin, second after exposure to mercury. In both cases Lymphocyte Transformation Test was positive. This case shows that drug allergy and systemic mercury allergy can be proven by this method (55). The acute toxic relevance of the burdening by mercury from dental amalgam plays no decisive role. Looking to chronic effects by long time low dose exposure to heavy metals toxicological values are not scientifically confirmed. As we already mentioned above many scientists pointed out the bad reproducibility of results concerning a low dose long time chronic burdening by mercury. The immunological toxic effects of mercury are comprehensively examined and detailed demonstrated. Plenty of scientific publications show worse effects of mercury from dental amalgam bothering the neurological, reproductive and the immune system as well as psychic behaviour. Mercury is neurotoxic!(32,36, 39,50,62) and is associated to Multiple Sclerosis (4, 51, 68, 69). Mercury is assumed to be associated to Autism (41, 46, 60) and Amyotrophic lateral sclerosis (43). Chronic exposure to mercury from dental amalgam destroys dopamine D2 receptors of basal ganglia and leads to Parkinson's Syndrome (54). Depending from Apolipoprotein E Polymorphism chronic exposure to mercury can induce Alzheimer's Disease (35, 59 61). Dental amalgam leads to micro albuminuria (6), has toxic properties to kidneys and is able to induce autoimmune reaction in these organs (63). The amount of mercury vaporized by dental amalgam induces cell adhesion molecules and leads to cardiovascular diseases (44). Amalgam blocks detoxifying enzymes (12, 52,83) and lowers the antioxidative capacity in women (64).

Mercury from dental amalgam has toxic effects on reproduction and is fetotoxic (2, 18, 19, 24, 77,85).

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### **Question 2:**

**In view of the above, is the use of dental amalgam safe for patients and users, i.e. dental health professionals? Are certain populations particularly at risk, e.g. pregnant women or children?**

*Disagree*

- 1. Unsatisfactory conclusion from the scientific point of view**
- 2. Relevant information missing from the analysis of the situation**

In view of the above the use of dental amalgam is neither safe for users nor for dental health professionals (62). Mercury vaporized from dental easily penetrates the placenta barrier. Mercury concentration in fetal liver arises higher than in the maternal liver. Postnatal mercury is set free from liver and is able to intoxicate other organs too especially the central nervous system (77, 85).

Population with lowered enzyme function of glutathion and / or superoxide dismutase (almost 50% of European population) due to genetically polymorphisms have a higher risk for mercury induced diseases. (50)

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### **Question 3:**

**Is there scientific evidence that supports a link between alternative materials and allergic reactions, neurological disorders or other health disorders?**

*Disagree*

- 1. Unsatisfactory conclusion from the scientific point of view**

## **2. Relevant information missing from the analysis of the situation**

Mercury chronically released from dental amalgam is the most known toxic, non radioactive heavy metal. It distributes easily inside the body and has a long but different half live in several organs and systems. With a time of more than 20 years the half lives in nervous tissues is on high risk (39). Monomers from resins are far away from this toxicity of mercury. This should not deceive about the fact that they also have toxic effects, are suspicious to cause hormone disorders and are sensitizers. Efforts on this sector show that resins with lower risk can be produced (e.g. Acetale). Circoniumoxyd is very biocompatible and has broad possibilities in use. These ceramic compounds also can be regarded positively under environmental and eco toxicological aspects. Another great advantage is that Circoniumoxyd can be fixed with cement. The use of toxic and / or allergic synthetic glue is not needed any more. (66)

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### **Question 4:**

**In view of the above, is the use of alternative dental restoration treatment safe for patients and dental health professionals? Are certain populations particularly at risk, e.g. pregnant women or children?**

*Disagree*

- 1. Unsatisfactory conclusion from the scientific point of view**
- 2. Relevant information missing from the analysis of the situation**

The use of cements is relatively safe for women, pregnant women and children. Monomers of resins are toxic and still are continuously vaporized after polymerisation. Polymers can induce allergic reaction as other materials as well. Some of the materials (Bisphenol A, Phthalates) are proven endocrine disrupters or supposed to be acrylates which also are strong sensitizers. At the moment the best known alternative inert material are Circoniumoxyd Ceramics (66)

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### **Question 5:**

**In view of the specific properties of dental amalgam and alternatives when used for dental restorative treatment, is dental health equally ensured by dental amalgam and alternatives?**

*Uncertain*

To be answered mostly by dentists.